



Loureiro Engineering Associates, Inc.

RCA RECORDS CENTER
FACILITY MAINTENANCE
ID. NO. CTD990672081
FILE LOC. R-12
OTHER RDMC#1121

May 31, 2001

**State of Connecticut
Department of Environmental Protection
Bureau of Water Management
Permitting, Enforcement & Remediation Division
79 Elm Street
Hartford, CT 06106**

Attn.: Mr. Richard C. Hathaway, Jr.

**RE: November 2000 Remedial Action Work Plan
January 2001 Request for Variance, Engineered Control of Polluted Soils
Willow Brook and Willow Brook Pond
Response to May 18, 2001 DEP Comments**

Dear Mr. Hathaway:

We have prepared this letter on behalf of our client, United Technologies Corporation, Pratt & Whitney Division (UTC/P&W), to provide responses to the comments raised by the Permitting, Enforcement & Remediation Division of the Bureau of Water Management in regards to the above-referenced documents. This letter is formatted to provide each of the comments followed by the response to the comment in italics. Submitted with this letter are one copy of the Remedial Action Work Plan and one copy of the Request for Variance, Engineered Control of Polluted Soils that have been revised in accordance with the response provided to each of the comments received. The Remedial Action Work Plan has also been revised to respond to written comments received from the Environmental Protection Agency.

It should be noted, during the period of time following the original submittal of the Remedial Action Work Plan (RAWP), design activities have been performed to support the preparation of permit applications to the State of Connecticut Department of Environmental Protection Inland Water Resources Division and the United States Army Corps of Engineers. These design activities have resulted in two modifications to the project as conceived in the November 2000 Remedial Action Work Plan. These changes are as follows:

1. The use of portable dams and by-pass pumping is no longer the method for and addressing wet-weather flows. The project will include the installation of a single 2,200 linear-foot by-pass channel to redirect flow within Willow Brook during the implementation of the project. The by-pass channel is designed to pass a 100-year storm event. By-pass pumping will still be required for stormwater outfalls located along the northern banks of Willow Brook Pond and Willow Brook. The methods for handling stormwater during the performance of the project have been revised in the attached Remedial Action Work Plan to address this modification.



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2. Based on comments received from the Inland Water Resources Division, the use of stone-filled gabions within the stream channel of Willow Brook has been eliminated. The revised cross-sections are included in the attached Remedial Action Work Plan and depict the use of riprap. The riprap has been sized to withstand the maximum velocity anticipated within the stream channel. The riprap channel lining is discussed in the attached Remedial Action Work Plan.

In recognition of the significant design activities that have taken place, the figures and drawings contained in the revised RAWP have been modified and/or replaced with figures and drawings that have been presented in the variety of permit applications necessary for the completion of the project. These figures and drawings are representative of the current status of the project design. It should be noted, the project is being performed as a design-build effort. As such, detailed design plans and specifications beyond that which is necessary to support the permitting efforts and to establish the performance criteria for the remediation project, are not necessary. Additional engineering design is not anticipated, other than the anticipated minor field alterations necessitated by changed conditions.

The Department's detailed comments on the plans are listed below.

Comments on "Remedial Action Work Plan":

1. Section 1.4.1, Nature and Extent of Contamination, Soil and Sediment, and Section 2.0, Statement of Work: Additional investigations will be required to determine the extent and sources of soil polluted with PCBs and other constituents in the vicinity of the Willow Brook culvert upstream of the Upper Willow Brook pond, and the banks of the ponds, wetlands, and stream channel. Additional remedial actions may be required. It is acceptable to perform these additional investigation and remedial actions at a later date or under the RCRA corrective action program overseen by the U.S. EPA, Region.

The Remedial Action Work Plan (RAWP) has been revised to provide specific definition to the lateral limits of the Willow Brook and Willow Brook Pond PCB remediation project. The description also indicates that measures to address contamination beyond those limits described below would be addressed in the future as separate projects.

2. Section 1.4.2, Nature and Extent of Contamination, Groundwater Sampling: Available monitoring data for wells WT-MW-08, MW-09S, and MW-09I, and any additional monitoring wells which are not shown on the figures must be submitted.

All available data for those wells identified above have been provided as an attachment to this letter. These wells were not originally included in the dataset as groundwater samples have not been collected from wells since November 1994 and more recent groundwater analytical data were available for locations representative of groundwater in the vicinity of Willow Brook and

Willow Brook Pond. The attached analytical data do not change the interpretation of the nature and extent of groundwater contamination identified in Section 1.4.2 of the RAWP. As a result, no revision to the RAWP has been made in response to this comment.

3. Section 2.0, Statement of Work: It should be verified that PCB contaminated sediments are not present in the culvert or in piping which discharges to the culvert, and that PCB contaminated materials are no longer discharging into the Willow Brook drainage system.

As discussed in the December 12, 1997 Work Plan for Willow Brook and Willow Brook Pond PCB Investigation, prepared by Loureiro Engineering Associates, known water discharges throughout the East Hartford Main Plant and Colt Street facilities at one point in time or another include Discharge Nos. 001 through 009. The location of these discharges is identified in Drawing No. 1 of the above-referenced report. The same report contains analytical data on PCBs for water collected from Discharge Nos. 001 through 004. These data indicate that PCBs were not present in the surface water samples at those locations. The same report also provides analytical data on a former oil/water separator in the ETAL area. The reference to the above report has been added to Section 1.2 of the RAWP.

4. Section 2.0: It should be clarified whether all wetlands sediments will be removed from the wetlands area down to the underlying alluvium, or whether wetlands sediments will only be excavated to a standard of 1 mg/kg PCBs.

Section 2.3.3 has been revised to indicate that "excavation will continue until all soil and sediment containing PCBs at concentrations in excess of 25 ppm within the pond and brook and 1 ppm within the wetland are removed. It is the intent that only those wetland sediments containing PCBs in excess of 1 ppm will be removed from the wetland. Based on characterization data for the wetland, it is likely that nearly all wetland sediments will require removal and offsite disposal to achieve this goal. However, it is not the intent to perform excavation beyond that which is necessary to achieve the project objectives.

5. Section 2.0: Sediment in the vicinity of WT-SD-47 in the upper pond has high concentrations of SVOCs, (for example 183 mg/kg benzo(a)pyrene. It is our understanding that sediment at this location will be removed prior to construction of the cap.

Based on characterization data, sediment in the vicinity of WT-SD-47 does not require excavation to achieve the goal of removing sediments containing greater than 25 ppm of PCBs. If it is necessary to extend the excavation into the vicinity of WT-SD-47 to achieve the goal of removing sediment containing PCBs at concentrations greater than 25 ppm, then these sediments will be removed prior to cap construction. However, in the event this is not necessary, the sediments in the vicinity of WT-SD-47 would be regraded to form the pond subgrade and the cap would then

be constructed. As a result, these sediments would not be removed, but would rather be located beneath the pond bottom cap.

6. Figure 2-1 appears to show that sediments in the eastern portion of the wetlands will not be excavated. However, the available data indicates that all sediments within the wetlands contain concentrations of PCBs exceeding 1 ppm and require excavation in accordance with the plan.

Figure 2-1 has been replaced with a larger scale drawing. This drawing, Drawing 2-3, more clearly depicts the limits of proposed excavation, including the eastern portion of the wetlands within the 1 ppm line.

7. Section 2.3.2, Former Oil-Water Separator: Additional detail is required regarding the standard to which "impacted soil surrounding the structure" will be removed and disposed of prior to construction of the engineered control. The plan must propose to remove any floating product prior to construction of the engineered control, including the oil product found at boring WT-SB-88.

Section 2.3.2 of the RAWP has been revised to clearly state that soil containing concentrations greater than 25 ppm PCBs will be removed. The RAWP has also been revised to clearly indicate that LNAPL will be removed in accordance with the requirements of Section 22a-449(d)-106(f) of the Regulations of Connecticut State Agencies.

8. Section 2.3.2: It is the Department's understanding that the location of piezometer WT-PZ-140 was mislabeled on the figures and that the soil contamination at WT-PZ-140 will be addressed as part of the oil-water separator remedial actions. Corrected figures are required.

The figures provided in Appendix A of the RAWP have been revised to address this comment.

9. Section 2.3.3, Contaminated Soil and Sediment Excavation and Off-site Disposal: There must be a plan describing construction and monitoring methods to ensure that there will be no potential exposure to unacceptable levels of airborne contaminants during the work. These must include, but are not limited to, methods to reduce dust creation, procedures to notify nearby workers and residents of the work, the applicable air quality criteria, air quality monitoring procedures, and notification procedures if air quality standards are exceeded.

The RAWP has been revised to include a Dust Control Plan as Appendix D. The Dust Control Plan established the project-specific maximum permissible dust level of 10 mg/m³ in air and establishes procedures to minimize the creation of dust, to control the spread of dust, for performance of routine dust monitoring, and performance of notifications.

10. Section 2.3.3, Stream Flow During Construction, pg. 15: There have been changes to the proposed procedures and it is proposed in the February 14, 2001 applications for the Clean Water Act Section 401 and 404 permits to construct a bypass channel to divert flow around the entire work area and eliminate temporary dams. The proposed procedure must be updated in this plan, and additional details must be provided or referenced. The plan should verify that the base and sidewalls of the channel will include an impermeable liner.

Section 2.3.3 of the RAWP has been revised to indicate that during construction, all flow entering the PCB remediation work area from the upstream conduit of Willow Brook will be bypassed by the construction of a channel capable of conveying a 100 year flood as defined by the Flood Insurance Study prepared for the Town of East Hartford in January of 1979. The by-pass channel is also depicted in Drawing 2-2 and is detailed in 2-3 through 2-5. As shown on Figure 2-4, the base and sidewalls of the by-pass channel will be provided with an impermeable liner.

11. Section 2.4.1, Post-Remediation Reports: Additional detail is required regarding the content of the post-remediation report. In general, most of the documentation items listed in section 2.3.6, Record-keeping and Reporting, and in Section 4.4.3, Documentation, must be included. Copies of the analytical reports as received from the laboratory should be submitted; however, it is acceptable and recommended that these reports be submitted on a computer disk in Adobe Acrobat or a similar read-only format.

The description of the post-remediation report in Section 2.4.1 was intended to provide a general summary of key elements of the report and was not intended to be an all inclusive list. In response to this comment, Section 2.4.1 has been revised to indicate that the post-remediation report will contain all information necessary to document the remediation activities performed at the site and makes reference to the items listed in Section 2.3.6 and 4.4.3.

12. Section 3.0, Project Schedule: A schedule must be provided for submittal of the proposed environmental land use restriction for review and approval.

Section 3 of the RAWP has been revised to provide for the submission of the environmental land use restriction to the DEP for review and approval as part of the post-construction activities.

13. Section 4.2.3 and Section 5.1.5, Disposal Characterization Sampling: Sampling of stockpiled soil for PCBs disposal characterization is not permitted under federal regulations 40 CFR 761. However, additional sampling of stockpiles for other constituents, such as metals and SVOCs may be performed for disposal characterization.

The RAWP has been revised to indicate that waste disposal characterization shall be based upon the as-found concentrations of the in-situ material. Additional analysis will be performed on

stockpile grab samples as needed to satisfy the disposal vendor. The waste will be disposed of based upon the more restrictive analytical data regardless of the as-found concentrations (e.g. if in-situ characterization documents < 50 ppm PCBs and the stockpile data suggests > 50 ppm, the waste disposal profile used for this particular load would be based on the stockpile data). Stockpile analytical data would not be used to reduce any disposal restrictions on the material.

14. Section 5.7.1, Field Analytical Procedures: The referenced table 5.5 does not indicate the precision and/or accuracy of the field test kits, which will be used for PCBs analysis.

Semi-quantitative PCB immunoassay test kits along with visible inspection of the soil samples will be used strictly for the purpose of screening soil samples to aid in the evaluation of the need to advance the excavation. Confirmatory samples will be submitted to a fixed laboratory for analysis for PCBs by USEPA SW-846 Method 8082A. Table 5-5 has been updated to include accuracy and precision data from the Hach Company PCB Immunoassay test kits. However, it should be noted that accuracy and precision of the PCB immunoassay test kits vary depending upon manufacturer and standard threshold values.

Comments on "Request for Variance, Engineered Control of Polluted Soils":

15. The plan must propose to continue monitoring and maintenance for as long as the engineering control is in place.

The Variance Request has been revised to provide for the performance of monitoring and maintenance for as long as the engineered control is in place.

16. As discussed at our meeting of April 23, 2001, additional monitoring wells are required immediately downgradient to the north and south sides of the former oil/water separator, and on the southeast bank of the upper pond, the southeast bank of the lower pond, and the south bank of the stream channel. It should be acceptable to relocate two or three of the existing proposed wells to these locations.

The Post Remediation Groundwater Monitoring Plan in the Variance Request has been modified to provide for the installation of two additional wells and the relocation of two wells to provide the coverage requested.

17. It is our understanding that the plan will include monitoring of groundwater in the granular fill layer of the cap, just above the organic soil layer. The plan should provide for sediment and surface water monitoring if the groundwater samples from the granular fill layer indicate PCB contamination.

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The Post Remediation Groundwater Monitoring Plan in the Variance Request has been modified to provide for the performance of surface water sampling if the groundwater samples from the granular fill layer indicate the presence of PCBs at concentrations in excess of the surface water protection criteria. Sediment sampling has not been proposed in response to presence of PCBs in groundwater above the surface water protection criteria as surface water sampling would be a more appropriate means to assess the effectiveness of the cap in protecting the surface water.

18. Inspection and maintenance procedures for the engineered control at the former oil-water separator must be proposed.

The Post Remediation Maintenance and Monitoring Program in the Variance Request has been modified to provide more detail regarding the proposed maintenance and monitoring activities to be performed. This modification also addresses the specific maintenance and monitoring for the engineered control in the vicinity of the oil/water separator.

19. Additional inspections should be performed after unusually heavy storm events.

The Post Remediation Maintenance and Monitoring Program in the Variance Request has been modified to provide for the performance of an inspection following the occurrence of a precipitation event resulting in greater than or equal to 2 inches of rainfall over a 24-hour period.

20. The plan should note the repairs which will be made based on the results of the inspections.

The Post Remediation Maintenance and Monitoring Program in the Variance Request has been modified to provide a description of the repairs to be performed as a result of deficiencies noted during the performance of inspections.

We hope that the above responses and the attached revised RAWP and Request for Variance adequately address your comments and meets with your satisfaction. As we have indicated on numerous occasions, UTC is fully committed to the implementation of this project during 2001 construction season. Your concurrence with the approach set forth in the attached RAWP is an essential element to the recognition of this goal. Should you have any further questions or comments, please do not hesitate to contact Lauren Levine of UTC at (860) 728-6520 or me.


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Sincerely

LOUREIRO ENGINEERING ASSOCIATES, INC.



Jeffrey Loureiro, P.E., L.E.P.
President

Attachment

cc: Lauren Levine, UTC, w/o RAWP
Juan Perez, U.S. EPA, w/o RAWP
Kim Tisa, U.S. EPA, w/o RAWP
Ernest Waterman, U.S. EPA, w/o attachment, enclosure
Elsie Patton, DEP, w/o attachment, enclosure
Lori Saliby, DEP, w/o attachment, enclosure
Melissa Toni, DEP, w/o attachment, enclosure
Cori Rose, ACOE, w/o attachment, enclosure

Attachment No. 1

Groundwater Monitoring Data
WT-MW-08, WT-MW-09S, WT-MW-09I

Attachment No. 1

Groundwater Monitoring Data
WT-MW-08, WT-MW-09S, WT-MW-09I

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2. Printed on 05/25/01

Table 2
SUMMARY OF CONSTITUENTS DETECTED IN GROUNDWATER
P&W East Hartford: WT-MW-08, WT-MW-09S, WT-MW-09I

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	Location ID	WT-MW-08	WT-MW-08	WT-MW-08	WT-MW-08	WT-MW-08	WT-MW-08	WT-MW-09I
	Sample ID	10081111891	10081061192	10081061192	10082061192	10082061192	1004758	10092111991
	Sample Date	11/19/1991	06/12/1992	06/12/1992	06/12/1992	06/12/1992	11/08/1994	11/19/1991
	Sample Time				:	:	16:00	:
	Sample Depth	5.80' - 15.80	5.80' - 15.80	5.80' - 15.80	5.8' - 15.8'	5.8' - 15.8'	5.8' - 15.8'	24.0' - 34.0'
	Laboratory	CEIM	CEIM	CEIM	CEIM	M&E?	AEL	CEIM
	Lab. Number	910644-15	920309-14	920309-16	920309-15	20309-15	AEL94010348	910646-21
Constituent	Units							
Date Metals Analyzed	-						11/14/1994	
Date Organics Analyzed	-						11/10/1994	
Date Physical Analyzed	-							
Antimony	mg/L						0.009	
Arsenic	mg/L			.006				0.008
Barium	mg/L	0.04	.03	.03	.16		0.032	0.14
Chromium (Unfiltered)	mg/l		.01		.02			0.02
Cobalt	mg/L							
Copper	mg/L				.79			0.50
Lead	mg/l		.017	.005	.012			
Mercury	mg/L				.0008			
Nickel	mg/L				3.65			3.23
Silver	mg/L				.02			
Thallium	mg/L							
Zinc	mg/l				.02			0.02
Cyanide	mg/L							
Cyanide (Amenable)	mg/L							
Benzene	µg/L					7		
1,1,1-Trichloroethane	µg/L					16		
1,1-Dichloroethane	µg/L					100		
1,2-Dichloroethane	µg/L					15		
1,1-Dichloroethylene	µg/L					8		
Dichloroethylene,1,2-, NOS	µg/l					2400		
Vinyl Chloride	µg/L					410	9.1	290
cis-1,2-Dichloroethylene	µg/L						7.8	
Tetrachloroethylene	µg/L	16				57	4.7	
trans-1,2-Dichloroethylene	µg/L							2000
Trichloroethylene	µg/L	10				360		320

Notes: 1. Only Detects Shown

2. Printed on 05/25/01



Table 2
SUMMARY OF CONSTITUENTS DETECTED IN GROUNDWATER
P&W East Hartford: WT-MW-08, WT-MW-09S, WT-MW-09I

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	Location ID	WT-MW-09I	WT-MW-09S	WT-MW-09S	WT-MW-09S			
	Sample ID	1004762	10091111991	1004760	1004761			
	Sample Date	11/09/1994	11/19/1991	11/09/1994	11/09/1994			
	Sample Time	10:45		10:00	10:15			
	Sample Depth	24.0' - 34.0'	7.00' - 17.00	7.00' - 17.00	7.00' - 17.00			
	Laboratory	AEL	CEIM	AEL	AEL			
	Lab. Number	AEL94010405	910646-22	AEL94010403	AEL94010404			
Constituent	Units							
Date Metals Analyzed	-	11/14/1994		11/14/1994	11/14/1994			
Date Organics Analyzed	-	11/11/1994						
Date Physical Analyzed	-	11/22/1994						
Antimony	mg/L							
Arsenic	mg/L	0.018	0.005		0.012			
Barium	mg/L	0.132	0.01	0.043	0.043			
Chromium (Unfiltered)	mg/l							
Cobalt	mg/L	1.194						
Copper	mg/L	0.529						
Lead	mg/l							
Mercury	mg/L	0.0014						
Nickel	mg/L	2.725						
Silver	mg/L	0.011						
Thallium	mg/L	0.0030						
Zinc	mg/l		0.01					
Cyanide	mg/L	0.580						
Cyanide (Amenable)	mg/L	0.155						
Benzene	µg/L	8.9						
1,1,1-Trichloroethane	µg/L	9.3						
1,1-Dichloroethane	µg/L	130						
1,2-Dichloroethane	µg/L	11						
1,1-Dichloroethylene	µg/L	10						
Dichloroethylene,1,2-, NOS	µg/l							
Vinyl Chloride	µg/L	340						
cis-1,2-Dichloroethylene	µg/L	1500						
Tetrachloroethylene	µg/L	65						
trans-1,2-Dichloroethylene	µg/L	4.8						
Trichloroethylene	µg/L	310						

Notes: 1. Only Detects Shown
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